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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,859	03/18/2004	Hirofumi Sahara	1213.43667X00	7725
24956	7590	07/26/2005	EXAMINER	
MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314			PATEL, NIKETA I.	
			ART UNIT	PAPER NUMBER
			2182	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,859

Applicant(s)

SAHARA ET AL

Examiner

Niketa I. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/18, 10/6, 05/31.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

RD

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species IV (Figure 13, Claims 1-10 and 17) in the reply filed on 05/31/2005 is acknowledged.
2. Claims 11-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species I, II, III, and V, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 05/31/200.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.
5. Claims 2 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2, line 12 and claim 8, line 12, recites a term "***and/or***". The term "***and/or***" renders these claims indefinite because the metes and bounds of the subject matter that will be protected by a patent grant are not defined.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-7, 9-10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shank et al. U.S. Patent Number: 6,145,028 (hereinafter "*Shank*") and further in view of Litvin et al. U.S. Patent Number: 6,721,814 B1 (hereinafter "*Litvin*".)

8. Referring to claims 1, 6, 7 and 17, *Shank* teaches an information processing system comprising a storage equipment which includes a logical unit logically assigned to physical devices [see *Shank* column 3, lines 35-45] and an information processing apparatus which sends data input/output requests to said storage equipment [see *Shank* column 3, lines 11-23 and column 4, lines 1-16], wherein the data input/output requests are transferred through logical paths serving as communication paths to said logical unit [see *Shank* column 3, lines 24-35], said information processing apparatus comprising a path selection management section which manages configurations of a plurality of blocks into which said logical unit is divided [see *Shank* column 4, lines 18-26 and column 3, lines 46-59 and column 6, lines 16-23], an I/O request allocation section which allocates data input/output requests to be transmitted to said storage equipment to said logical paths [see *Shank* column 4, lines 18-26], and I/O processing units which transmit said data input/output requests through said logical paths, according to the allocation determined by said I/O request allocation section, pursuant to an established protocol [see *Shank* column 4, lines 1-16 and column 6, lines 1-15], wherein said path selection

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management section assigns at least one of said logical paths to one of said blocks [see *Shank* column 4, lines 18-26.] *Shank* is silent regarding the limitation of wherein a cache memory is provided to prefetch and store both data in a location to be accessed by one of said data input/output requests and data in locations following said location within said physical devices however, *Litvin* teaches the above limitation [see *Litvin* figure 1, element 31 and column 2, lines 9-36, 'read ahead' and 'cache'] in order to improve I/O request response time.

One of ordinary skill in the art at the time of applicant's invention would have clearly recognized that it is quite advantageous for the storage system of *Shank* to be able to read data ahead of time and storing it in a cache memory in order to improve I/O request response time. It is for this reason that one of ordinary skill in the art would have been motivated to implement *Shank's* memory system with a cache memory, which stores prefetched data in order to improve I/O request response time.

9. **Referring to claim 3**, teachings of *Shank* as modified by the teachings of *Litvin* teaches wherein said cache memory is included in a disk control unit within said storage equipment [see *Litvin* figure 1, elements 31 and 12.]

10. **Referring to claims 4, 9**, teachings of *Shank* as modified by the teachings of *Litvin* teaches wherein said I/O processing units are provided with said cache memory [see *Litvin* figure 1, elements 11A and 23.]

11. **Referring to claims 5, 10**, teachings of *Shank* as modified by the teachings of *Litvin* teaches wherein said path selection management section includes a path management section which creates a path management table containing information about said logical paths that are recognizable at the start of said information processing apparatus [see *Shank* column 4, lines 1-

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26 and column 6, lines 1-23 and figure 1, elements 142, 140, 136], a blocks setup management section which creates an LU management table containing information about said logical units, referring to said path management table [see *Shank* column 4, lines 1-26 and column 6, lines 1-23 and figure 1, elements 142, 140, 136], and a block management section which creates a block management table containing information about said blocks, referring to said LU management table [see *Shank* column 4, lines 1-26 and column 6, lines 1-23 and figure 1, elements 142, 140, 136], wherein said path selection management section divides said logical unit into a plurality of blocks and assigns said logical paths to said blocks, referring to said block management table [see *Shank* column 4, lines 1-26 and column 6, lines 1-23 and figure 1, elements 142, 140, 136.]

12. As far as the Examiner can interpret the claims in light of the 35 U.S.C. 112, second paragraph, supra, claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shank et al. U.S. Patent Number: 6,145,028 (hereinafter "*Shank*") and further in view of Litvin et al. U.S. Patent Number: 6,721,814 B1 (hereinafter "*Litvin*".)

13. **Referring to claims 2, 8**, teachings of *Shank* as modified by the teachings of *Litvin* teaches wherein said I/O request allocation section includes a section to detect path fault which detects a faulty path among said logical paths and a section to detect path recovery which detects recovery of the faulty path among said logical paths [see *Shank* column 5, lines 5-20], wherein when a faulty path is detected by said section to detect path fault or when the faulty path recovery is detected by said section to detect path recovery, said path selection management section reconfigures said blocks by altering size of said blocks *and/or* the number of paths assigned to said blocks [see *Shank* column 5, lines 5-20 and column 7, lines 61-67.]

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents have been made record of to further show the state of the art as it pertains to providing plurality of paths to a memory location:

Casper et al. U.S. Patent Number: 6,473,782 B1

Yamamoto et al. U.S. Patent Number: 5,680,574

Yamamoto et al. U.S. Patent Number: 6,915,403 B2

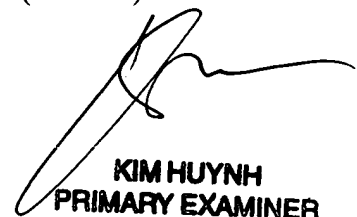
Lee et al. U.S. Patent Number: 6,708,254 B2

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Niketa I. Patel whose telephone number is (571) 272 4156. The examiner can normally be reached on M-F 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici can be reached on (571) 272 4083. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NP
07/19/2005


KIM HUYNH
PRIMARY EXAMINER
7/21/05